

ASHESI UNIVERSITY  
DEVELOPING COST MANAGEMENT SYSTEM FOR ADIL FOODS

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Ashesi University College in partial fulfillment of the requirement for the award of  
Bachelor of Science Degree in Business Administration

B.Sc. Business Administration

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## Declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

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Date: .....27/04/2021.....

I hereby declare that the presentation and preparation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by Ashesi University College.

Supervisor's Signature: .....

Supervisor's Name: ...Dr. Justina Kwami Morris.....

Date: .....

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## Executive Summary

Adil Foods Corporation is a food company that has recently stepped into the agricultural industry. The company operates in Multan, Pakistan, and has been operating since 2001. The company provides white meat and eggs to suppliers of the domestic market. The management of Adil Foods expressed that their business failed to achieve the profitability goal for the year 2020. Mr. Rashid, the CEO of Adil Foods, noted issues with the cost monitoring and data analysis.

The tools used for data collection were structured interviews, observation, and the company's financial & internal reports. The CEO, Financial manager, and production manager were interviewed. Framework analyses were used to analyze the data. The results revealed that the business failed to achieve its profitability goal due to a lack of data analyses. The lack of data analyses was leading to poor decision-making.

The literature review explored functionalities, conceptual frameworks, and limitations of the Enterprise resource planning software (ERPs) and excel-based cost management system. The existing literature coupled with the primary research indicated that an excel-based cost management system is better for Adil Foods as it is cheaper and Adil Foods management is familiar with the software.

The proposed solution is a tailor-made cost management system that uses variable costing and sensitivity analysis to compute valuable information and generate signals. The excel based cost management system also forecasts data which will assist managers in making rational and prompt decisions.

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## Chapter 1: Introduction

### 1.1 Company Overview

Adil Foods Corporation is a food company provides a wide range of snacks. Nimko is a local snack made from ingredients rich in nutrients such as chickpeas. The company's goal is to provide mouth-watering and healthy Nimko for their customers. With over 20 years of experience in the food industry, the company offers Nimko in seven different seasoning Masala flavors, and the packets come in three different sizes. Some of the Masala flavors are Salty, Chill, Mixed nuts, and mixed Nimko. The company is building a brand that would be respected for creating a healthier future by providing quality food products. Adil Food's corporate structure consists of four main departments that contribute to the company's overall mission. These four departments are Production, quality control, Marketing, and Finance. Adil Foods has a functional structure; all the employees with a similar set of tasks are grouped together. The Chief Executive officer (CEO) believes that encourages the employees to become specialists in their field. The company currently employees fifty-two employees, which qualifies Adil Food as an SME. The company is currently headquartered in Multan, Pakistan, and is planning to shift to Lahore.

Adil Foods has recently stepped into the agricultural industry. The company plans to continue building its brand by consistently providing high-quality and natural poultry products to its consumers. The business is mainly focusing on poultry for now; the entity is raising birds domestically and commercially for meat and eggs. The company's short-



term goal is to increase its overall profitability for the year by 20%. Adil Foods failed to achieve its profitability goal for the year 2020. For now, the company is targeting middle to high-income customers who are willing to pay a premium for organic white meat and eggs. Adil Foods is currently focusing on providing its products in Multan. The corporation plans to include dairy products in its product line to increase its revenue in the near future.

## 1.2 Swot Analysis

SWOT analysis is a valuable framework that helps the organization to develop full awareness of all the factors involved in making a business decision. It assists in understanding the different dynamics of the business and evaluates the strengths, weaknesses, opportunities, and threats. SWOT analysis is also used to assess the business with respect to its industry or market.

### *1.2.1 Strengths*

- One of the strengths of Adil Food is its organizational culture. The executive team promotes a democratic leadership style by encouraging its employees to contribute to decision-making processes.
- The executive team is goal-orientated, visionary, and committed. Planning and creation of short- and long-term goals have enabled the company to be more competitive.
- Additionally, it is essential to note that even though Adil Foods operates in a rural area, it has full access to water and electricity services. The availability of cheap labor in the rural area also benefits the business

- Lastly, the region where Adil Foods operates has a stable demand for white meat and eggs. This will allow the company to plan product production and effectively create efficient cash flow management.

### *1.2.2 Weaknesses*

- Due to a lack of understanding of strategic planning and financial management skills, Adil Foods has failed to optimize its resources. The business has been unable to recognize market opportunities and unleash its true potential.
- Adil Foods still uses traditional record-keeping methods, which reduces business efficiency. The business needs to improve its operational processes by shifting to automated processes.
- The unavailability of skilled labor has made it challenging for Adil Foods to improve its operational activities by shifting to automated processes.
- Financial constraints also play an essential role; Adil Foods does not have enough capital to introduce the latest machinery and scale up its business.
- Lastly, economic factors like High Inflation and import duties are severely impacting the firm's cost structure. Increasing input costs is reducing the profit margin.

### *1.2.3 Opportunities*

- There is a progressive shift from consumption from red meat to white meat in Pakistan as it offers a healthy lifestyle. This allows the business to scale up its operations as the demand for white meat and eggs increases over time.

- Adil Foods can also increase its profit margin by supplying processed meat to the end customers.
- Adil Foods has the opportunity to export Halal meat around the world. Halal meat is slaughtered differently from conventional meat; a religious criterion guides it. There is a high demand for white meat among Islamic countries; Adil Foods can export premium high-quality meat to earn revenue.

#### *1.2.4 Threats*

- The biggest internal threat is disease outbreaks. Disease outbreaks can reduce egg production and worsen the mortality rate; Disease outbreaks result in severe economic losses within the shortest period.
- Devaluation of the Pakistani rupee increases importation costs. Vaccine cost increases from the devaluation of the rupee as the business import the vaccine. This, as a result, decreases the profit margins of the business.
- Another threat is the cut-throat competition in the poultry business. It will be challenging for the business to compete with bigger and advanced poultry businesses and companies.

<p style="text-align: center;"><u>Strengths</u></p> <ul style="list-style-type: none"> <li>-The executive team is goal-orientated</li> <li>-Democratic style of leadership</li> <li>-Availability of natural resources</li> <li>-Cheaper labor as the business operates in a rural area</li> <li>-The poultry industry operates in a defensive industry</li> <li>-Consistent demand for firm's products</li> </ul>	<p style="text-align: center;"><u>Weaknesses</u></p> <ul style="list-style-type: none"> <li>-Lack of financial management skills</li> <li>-Lack of understanding of strategic planning</li> <li>- Financial constraints</li> <li>-Skilled labor not widely available</li> <li>-Manual record-keeping</li> <li>-Importation cost (Technology, Vaccines)</li> <li>-A high rate of Inflation</li> </ul>
<p style="text-align: center;"><u>Opportunities</u></p> <ul style="list-style-type: none"> <li>-Increased consumption of white meat</li> <li>-Assist a healthy lifestyle (high in protein - content, low cholesterol)</li> <li>-Exporting to other countries</li> <li>-Value addition (processed white meat)</li> <li>-Recycling poultry waste</li> <li>-Targeting end customers</li> </ul>	<p style="text-align: center;"><u>Threats</u></p> <ul style="list-style-type: none"> <li>-Disease outbreaks</li> <li>-White meat rate fluctuations in the local market</li> <li>-Harder to compete with bigger and advanced poultry businesses and companies</li> <li>-Devaluation of rupee (Increased vaccine cost)</li> </ul>

### 1.3 External Context

Adil Foods Corporation operates in Multan, Pakistan. It is essential to understand the general environment in which the organization is operating before developing cost-effective and risk-limiting strategies. The PESTLE analysis framework is used to understand the business environment. The factors are given in-depth below explanation in the context of the Pakistani Poultry Market as follows.

#### *1.3.1 Political*

The current government's agriculture policy goals are to achieve a high growth rate (exceeding the population growth rate), enhance productivity, and develop and conserve

natural resources. Currently, the government is not imposing any direct tax on poultry farmers. This step was taken to encourage investors and private individuals to invest in the poultry farming business. The governmental policies attempt to build a better and stable poultry farming production system to assist both the farmers and the consumers. In the last few years, the government has played a crucial role in livestock development through micro-credit. The current government now plans to provide micro-credit to small-scale businesses in poultry farming to increase production. From a political point of view, the government of Pakistan is willing to assist the producers, which is a positive sign for the poultry industry.

### *1.3.2 Economic*

Pakistan's GDP was \$276.1 Billion in 2019, and the current economic growth rate is -0.4%. The overall applied tariff has also increased from 2019. Pakistan's inflation rate for the year 2020 is 11.12%, which is the highest in the last eight years. An increase in tax rates, interest rates, and import duties has resulted in cost-push Inflation. These decisions had a negative impact on the poultry industry as the input costs increased and the profitability reduced. According to the Pakistan Poultry Association, "the biggest factor behind the increased production cost was currency devaluation, as the cost of imported poultry medicines and vaccines in dollar terms had increased tremendously"(PPA,2018). The government is currently trying to work out this issue by providing subsidies to poultry farmers. Currently, poultry businesses' economic environment is challenging, but it is a viable and profitable business. The continuous increase in demand for white meat combined with export prospects, especially in Muslim countries, can help poultry

businesses to gleam. According to a report by the National Bank of Pakistan, the "Poultry sector is one of the most organized branches of the Agro-based sector in Pakistan, and its growth rate is 10-12% per annum"(NBP,2015).

### *1.3.3 Social-Cultural*

Pakistan's current population is approximately 240 million. According to the Pakistan Poultry association, "the poultry sector generates employment and income for about 1.5 million people". Religious influence makes this business attractive as Muslims around the world eat Halal meat. This encourages poultry businesses to expand and scale up their position. In Pakistan, the supply of red meat is continuously depleting, making it much more expensive, which is why the demand is shifting towards white meat. Though labor for poultry farming is cheap and widely available, the majority is unskilled and uneducated. Training labor requires time and money, which are both crucial for businesses. Most businesses follow traditional concepts and techniques.

### *1.3.4 Technology*

The majority of businesses have failed to evolve over time. Only a few large-scale companies inducted technology to enhance their traditional production systems and processes to further enhance productivity over the last few years. Small-scale businesses neither have the resources nor the knowledge to use modern technology to benefit their business. The automation level is minimal, and most tasks and operations are manual, especially in rural areas. The increase in import duties has made it harder for businesses to afford the latest technology.

### *1.3.5 Ecological*

In terms of resources, land, labor, water, and quality feed is widely available in Pakistan. The climate plays a crucial role as changes in weather directly impact white meat and eggs' prices. According to Hussain *et al.*, 2015 "In months of extreme heat and cold white meat is expensive." Brooding costs in winter and high mortality rates in summer increase cost, which results in higher prices. The prices of eggs are usually high in winters and low in summers. According to Emilie Abraham, a technical officer within Agri bank's Agri Advisory Services Division, "egg production is highest during summer and lowest in winter. This is because longer days in summer expose birds to lengthier periods of daylight, which stimulates egg production" (Abraham,2014).

### *1.3.6 Legal*

Currently, the government has exempted direct tax on the poultry business. Indirect taxes, like sales tax and withholding tax on their electricity bills, is still not exempted. The government does not encourage farming companies to export white meat to other countries as the local demand is still not met. The import duties have increased over the last years, which has made it difficult for businesses to import the latest technology.

## 1.4 Conclusion

Both PESTLE and SWOT analysis were used to systemically evaluate Adil Foods. These frameworks provided a fair understanding of how internal and external factors can influence the performance of the business. These results were then later used to analyze and identify the problem in Adil Foods Corporation.

## Chapter 2: Needs Assessment

### 2.1 Chapter overview

This chapter pinpoints the problems identified in Adil Foods Corporation's poultry farming business model. The need-based assessment highlighted and assessed why the company has struggled to generate profit in this business. After identifying the problem, a solution was prepared to enable the company to perform better in the future. The poultry farming business has been operational for more than a year now; it is critical that the company improves its poultry farming business model and capitalize on this market opportunity to generate profit. The executive management is expecting a higher profit contribution from the poultry farming business model. This new business division will be closed down if it fails to generate any profit next year; therefore, it is important to pinpoint and rectify the fundamental problem.

### 2.2 Needs Assessment

"A needs-based assessment is a systematic process that studies different aspects of the business and determines what the business needs to do to improve its current state" (McCawley,2018). Adil Food's poultry business has been unable to generate any profit for the year 2020. This approach will help the organization to focus on the area that needs improvement. The needs-based assessment will enable the organization to identify why the



business is consistently failing to generate profit by narrowing down the gap between where the organization is currently and where it needs to be.

### 2.3 Research Methodology

A mixed-method approach was used to answer the question, "Why did Adil Food's poultry business fail to achieve its profitability goal in 2020?" The qualitative research method placed emphasis on asking managers and executive members why they think the business has failed to perform in the last few months? The quantitative research method focused on collecting internal operational data. This triangulation gave a better understanding of the problem and provided more evidence.

#### *2.3.1 Qualitative Method*

The main goal of using the qualitative research method was to understand the organization's culture through interacting with the team and the managers. The qualitative research explored the perceptions, opinions, beliefs, and attitudes of the employees working in Adil Foods Corporation. Observational research and structured interviews were used as a tool to collect the data for this study. One of the research goals was to understand the basic fundamentals of the business. The structured interview was used as a tool to collect useful information because it offers a richer and more comprehensive view of an issue. Standardized questions also make the process more efficient. Both of the research tools assisted in collecting valuable information was. All the information was then synthesized in order to understand the basic fundamentals of the business. The execution of each method is stated under the Data Collection section in detail. Framework analysis

was used to analyze the qualitative data. This process involved five steps: familiarization, identifying a thematic framework, indexing, charting, and mapping and interpretation.

### *2.3.2 Quantitative Method*

The quantitative method focused on "what" and "why" and was more structured and objective. Adil Foods Financial Statements and Internal operation reports assisted in pinpointing the problem. The execution of each method is described in detail under the Data collection section.

## 2.4 Data Collection

The data collection tools used in the Need-Based Assessment are structured interviews, observations, and financial data collection. These tools helped in gathering helpful information that was later used to identify and analyze the problem. The profitability Issue Tree framework assisted in asking the right questions as it divided the profitability issue into two main segments (Revenues and costs) and then inspected both components.

### *2.4.1 Structured Interviews*

Three structured interviews were conducted in the needs assessment research process. All of the interviews were face-to-face. Structured interviews provided accurate and relevant information; it also made the research process more efficient. The first interview was with the Chief Executive officer, Mr. Rashid. The interview with Mr. Rashid

helped us to understand the fundamental processes and dynamics of the business. The second structured interview was with the finance officer, Mr. Saqib, who gave us a brief overview of the business's cost structure and provided insights regarding the cost monitoring and decision-making processes. The last interview was with the Production Manager, Mr. Atif. This engagement helped us understand the basic operations of the business. The structured interview encouraged the interviewees to put their perspectives on the table. All of them were asked this key question, "why do you think the business failed to perform in 2020 ?"

#### *2.4.2 Collection of Administrative Financial data*

All the financial and operational data were collected from the production and finance departments. The financial data consisted of Income statements and Statements of comprehensive income. These files showed quarterly sales, cost of sales, operational expenses, and profits of the poultry farming division. The internal files had a break-down of all day-to-day internal expenses. All the financial and operational data were processed manually by the company. The lack of data analysis in the internal reports revealed why the business failed to achieve its profitability goal in 2020. The business did not have any tool for data analysis. The financial managers were only monitoring costs and inputting the data in an audit book. They did not have any real-time information to make timely and rational decisions.

### *2.4.3 Observational Research*

A natural direct observation strategy was used to analyze both the production and management processes. Observing production processes provided insights that helped answer whether the workers were following the Standard Operating procedures or not? Observing management processes helped in answering whether the existing system is monitoring business operations and communicating with suppliers effectively or not?

## 2.5 Research Objectives

The three research objectives are mentioned below:

- 1) To Understand the fundamental operational process of the business
- 2) To Analyze why the business failed to achieve its profitability goal
- 3) To Develop an intervention plan to counter the problem

## 2.6 Key Findings

### *2.6.1 Structured Interviews*

#### Interview with Mr. Rashid (CEO)

During the interview, Mr. Rashid talked about various operational activities that take place in the farming division—feeding the chickens, monitoring the condition inside the chicken houses, collecting eggs, and many others. Mr. Rashid was not satisfied with the current level of production and profits. He believed that the business needed to improve its profitability by accurately monitoring the production cost and analyzing the day-to-day operational data. With accurate financials and day-to-day operational data, the business managers can make better decisions and reduce the cost of production

#### Interview with Mr. Saqib (Finance Manager)

During the interview, Mr. Saqib explained how the business monitors its day-to-day operating cost. It was surprising to note that the business records its sales and operational costs manually in a cost audit handbook. Mr. Saqib believed that a manual information system is time-consuming, and it halts business growth. According to Mr. Saqib, monitoring costs in the poultry farming business is complex and complicated. There are a lot of variable costs that increase exponentially as chicken growth takes place. From his perspective, the business can achieve its profitability goal if it has an automated information system. It will help him manage and evaluate all the operational costs; the business will also forecast its financial data, enabling the key stakeholders to make better decisions for the business.

#### Interview with Mr. Atif (Production Manager)

During the interview with Mr. Atif, he highlighted the basic day-to-day operating procedures. Mr. Atif believed that all activities taking place need to be recorded. He suggested that there should be flock-specific records and flock information report forms that list all the vaccines administered and syndromes diagnosed. Record keeping will help the business to mitigate risk and reduce the chick mortality rate. In his view, all large-scale businesses heavily rely on record keeping; this allows them to evaluate and take corrective actions.

### *2.6.2 Administrative Financial data*

The financial statements and internal reports were analyzed and evaluated in-depth. The quarterly financial statements showed that the production level and profit were decreasing over time. On the other hand, the cost of production was increasing. The internal reports were not detailed and did not explicitly show why the costs have increased over time. The internal reports should have explained why the business failed to achieve its goal, but the internal reports were vague and unclear. Lack of cost information did not allow the managers to make timely decisions. Essential information like cost per chicken or cost per egg was missing. It was quite clear from the internal reports that the business has failed to monitor and calculate its costs closely. The current record-keeping system is outdated. The finance managers manually write down and calculate the results. This has led to inconsistency in data entry and room for errors. Current internal reports are less detailed and do not forecast results. The initial capital investment and day-to-day operational costs are listed below:

### *2.7 Qualitative and Quantitative analysis*

The qualitative data were analyzed using framework analysis. It is important to note that indexing, charting, and mapping of the qualitative data were not required because the sample size was relatively small. The first stage was the familiarization with the data, and it encouraged to look at the differences between the participant's responses. The first stage revealed that only Mr. Atif believed that the business failed to achieve its profitability goal due to lack of record keeping. All the other participants had different answers. The second stage was about identifying a thematic framework. This stage encouraged to identify the

key themes in the data. The second stage revealed that both Mr. Rashid (CEO) and Mr. Saqib (Finance manager) believed that the business failed to achieve its profitability goal due to lack of data analysis. The internal reports further cemented and backed this thematic framework as internal reports did not show any data analysis. This meant that the financial and operational managers had very little valuable information about the business.

<b>Initial Capital Investment</b>	<b>Rs.</b>
Steel Cage & Plantation	40,000
Mini water dispensers	5,000
Feeders	20,000
Ceiling fans	12,000
Industrial exhaust fans	10,000
Led Bulbs	8,640
Heaters	30,000
Salary	16,000
<b>Total Initial Capital Investment</b>	<b>141,640</b>

<b>Single Batch Costs</b>	<b>Rs.</b>
One-day old chick	38
Number of chicks in a single batch	5,000
<b>Total cost of buying</b>	<b>190,000</b>
<b>Basic costs</b>	
Transportation cost	7,000
Debeaking of birds	1,250
Marix injection	10,000
Flushing (after every 15 days)	700
De-worming (after every 30 days)	6,000
Feed Bag (no egg) 50kg bag	3,185
Feed Bag (egg) 50kg bag	3,590

<b>Vaccination costs</b>	<b>Rs.</b>
ND+IB (1 voil covers 1000 chicks)	1,100
Ghambora (1 voil covers 1000 chicks)	1,700
Andi-Cologne (1 voil covers 1000 chicks)	1,100
ND+H9 ( 1 voil covers 1000 chicks)	7,500
Foul-pox ( 1 voil covers 1000 chicks)	1,500
ND All (1 voil covers 1000 chicks)	1,100
ND+IB+EDS (1 voil covers 1000 chicks)	11,000

### 2.8 Identified Gap

Key stakeholders, financial statements, and reports pointed out that the outdated manual information system is halting Adil Foods' growth. The business needs a personalized automatic information system that monitors and calculates all the variables and fixed costs, generates key reports, and forecasts data. This will allow the finance managers to analyze and make better decisions. Essential information like weekly operating cost, egg efficiency, revenues from white meat and eggs is currently missing. The financial managers can take better decision if they have all this information.

### 2.9 Conclusion

This chapter explained the research process and identified a gap in Adil Foods Corporation's business model. The next chapter focuses on reviewing and screening of existing solutions which might help Adil Foods to close this gap.



## Chapter 3: Mastery of Subject Matter

### 3.1 Introduction

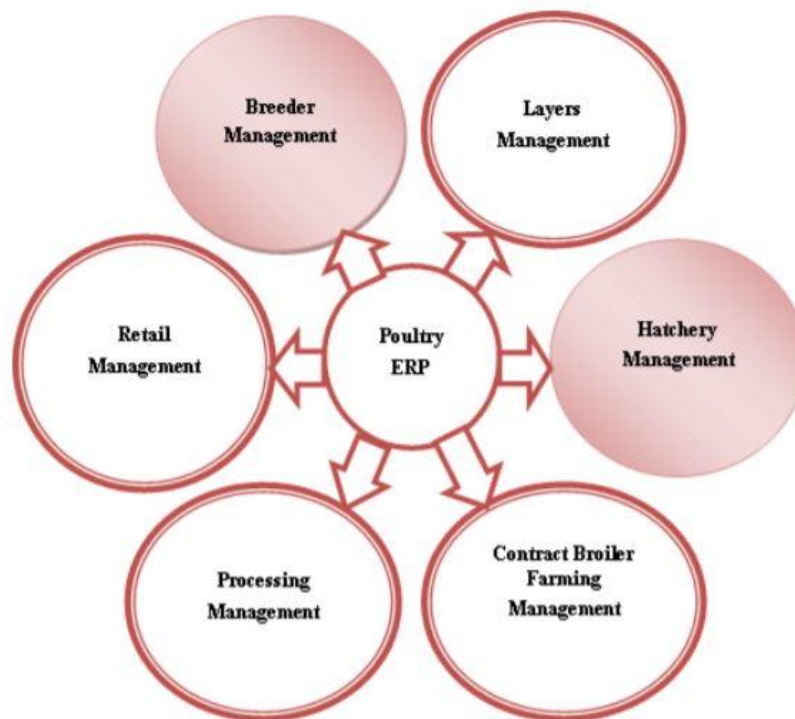
The chapter explores functionalities, conceptual frameworks, and limitations of the various solutions using the existing literature. It then selects the most appropriate solution for Adil Foods. It is important to note that the existing literature about excel based cost management systems is very limited; therefore, the chapter emphasizes more on its operational capabilities rather than focusing on the impact of the solution. The needs-based assessment highlighted that the traditional data management system is stammering the company's growth. Adil Foods needs a system that not only monitors costs but also provides data analysis to the managers.

### 3.2 ERP's (Enterprise Resource Planning Software)

#### *3.2.1 Key Functionalities*

According to Lin, "Enterprise resource planning (ERP) systems are developed to manage and integrate business processes across organizational functions and locations." (Lin,2010) Traditionally, each department of an organization uses a separate software application that limits the interaction between the systems. These ERP systems were created to mitigate this issue by treating the whole organization as a single enterprise. The ERP system integrates all the business functions into a single system that can be shared within a company. There are various ERP solutions available for the poultry business. These systems are designed to record all transactions and activities involved in the poultry farming business. It integrates functions such as Feed production, feed Formulation, sales, and Flock performance. There is very limited information about the implementation and

usage of ERP software in the Poultry business in Pakistan. However, research has shown that most of the other South Asian countries deploy this ERP software to drive growth. According to Geetha, "In India Poultry Farming ERP software is regularly an assortment of information the board capacities that help poultry ranchers, all the more effectively run their homestead. (Geetha,2020). The poultry farm Enterprise resource planner software has five modules. The figure below illustrates the five modules.



According to Geetha, "the ERP system provides core business modules, system integration, and Web-based operability" (Geetha,2020). These features allow the system to accelerate information flows and manage all the core operations separately. The ERP software monitors all the operational costs and analyzes data in depth. Some of the key features of the Poultry ERP are Flock placement planning, Chicken Procurement

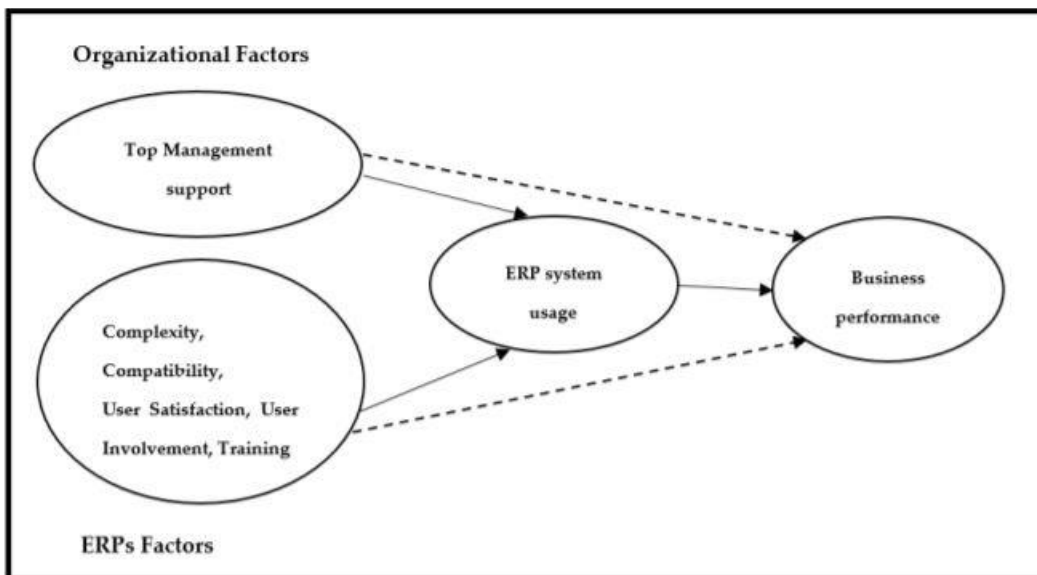
Management, Coverage of Daily transactions for the flock and Feed consumption, Analysis of Flock performance, and chicken delivery management.

### *3.2.2 Theoretical Framework*

Various factors influence the performance of the ERP software. It is important to examine these factors to decide whether ERP effectively solves Adil Foods' problem. According to the AlMuhayfith and Shaiati, complexity, compatibility, training user involvement, user satisfaction, and top management support have been shown to have consistent associations with the ERP system usage and business performance". Lin, a renowned researcher, surveyed large Taiwanese corporations and developed an empirical model to examine the consequences of IS quality and management support on ERP usage in his research paper. According to Lin, "research found that management support affects the ERP usage" (Lin,2010). Ruivo et al. developed a research model based on two theories: diffusion of innovation theory (DOI) and resource-based value theory (RBV). According to Ruivo, Oliveira & Neto, "the survey for data collection and their cross-country analysis concluded that for Portuguese firms, complexity, compatibility was significant, these were not so for Spanish firms." (Ruivo, Oliveira & Neto,2012). Their findings revealed that complexity is a significant factor in ERP system usage. Likewise, Nwankpa and Roumani published a paper based on a study of numerous industries where they assessed the factors that influence ERPs usage and user satisfaction via an online survey. According to Nwankpa and Roumani, the study revealed that "user satisfaction is a vital factor in ERPs usage" (Nwankpa & Roumani, 2014).

Similarly, a recent study by Costa, Ferreira, Bento & Aparicio pioneered the research on finding the significant factors affecting ERP user satisfaction and adoption.

The study was based on data collected from 260 companies, which were randomly selected. It revealed that "the top management support has a substantial influence on the usage of the ERP system" (Costa, Ferreira, Bento & Aparicio, 2016). The existing literature proves that the factors mentioned above are a key part of the theoretical framework and significantly impact the solution. The diagram below illustrates the relationship between the factors and performance.



### 3.2.3 Limitation of ERP

The existing literature has pointed out many limitations. Equey and Fragnière noted that "ERP systems were implemented mainly in large enterprises" Equey & Fragnière (2008) . The literature has shown significant dissimilarities between SMEs and large companies. For example, Mabert and Venkataramanan's research study revealed that "implementing ERP systems at large organizations may come with a comparatively lower cost than for SMEs" (Mabert & Venkataramanan, 2003). Hunton, Lippincott, and Reck agreed that "organizations that intend to implement an ERP system must have enough resources to do so. Additionally, a lack of long-term planning and having adequate training

are some of the problems that SMEs may face". (Hunton et al. 2003). Muscatello et al. and Christofi et al. also noted that "the odds of small businesses to survive or to recover quickly after the unsuccessful implementation of ERP systems is less than larger enterprises because of their reduced resources." (Muscatello et al.,2003; & Christofi et al.,2013).

Gunasekaran, Okko, and Yli-Olli's research study explored that "extensive training is often expensive for the SME's" (Gunasekaran et al., 1996). Gloria Lee conducted a cross-data analysis, and the results were compatible with Gunasekaran's research results. Lee believes that extensive training is very costly for SMEs ( Lee, 1995). Kinni, in his research study, further explored this issue and found out that "SMEs end up paying high rates for consulting support" (Kinni, 1995).

The existing literature has also indicated that it is more challenging for SMEs to implement the ERP system. According to Scott and Vessey, "the research concluded that the failure of ERP implementations was not caused by the ERP software itself, rather by a high degree of complexity from the massive changes ERP causes in organizations" (Scott & Vessey, 2003). Separate research studies by Helo, Anussornnitisarn & Phusavat and Maditinos, Chatzoudes & Tsairidis backed this argument by performing empirical analysis. According to them, ERP implementations fail due to a high degree of operational complexities. (Helo et al.,2008; & Maditinos et al., 2011).

### 3.3 Excel-based Cost management System

#### *3.3.1 Key Functionalities*

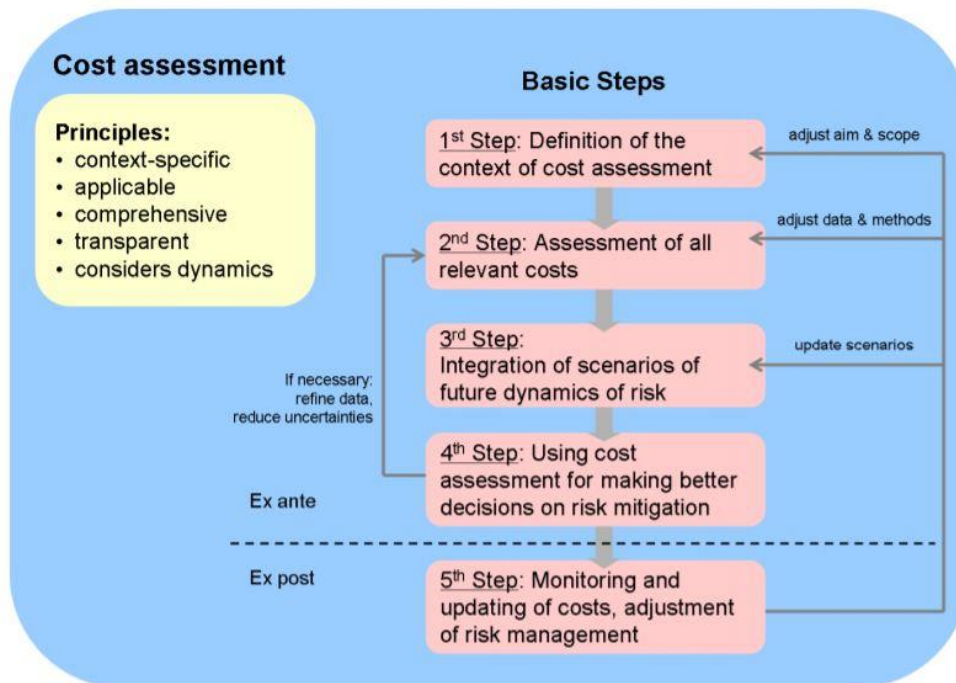
An excel-based cost management system performs quantitative estimates or provides projections based on a set of underlying assumptions. According to Thakur, "Financial models play a vital role in most business decisions; it assists them in long-term planning, expansion, development, and cost planning (Thakur, 2020). According to Donovan, "Excel has one of the complete data organization and analysis systems; it can handle thousands of data formulations and computations seamlessly (Donovan,2020). The two most prominent features of the excel-based cost management system are its flexibility and familiarity. Microsoft has regularly added more build-in functions in Excel that allow the users to create different types of models. Excel provides tailor-made solutions that ensure that organization's needs are addressed. Some of the key functionalities that excel-based cost management can provide to the company are: Coverage of Weekly transactions for the flock and Feed consumption, In-depth cost analysis, Overall revenue & cost management, and Forecasting of overall operational costs and profits.

#### *3.3.2 Conceptual Framework*

According to Ferreira, "the cost management system categorizes the costs faced by companies into two main categories: fixed and variable costs" (Ferreira,2013). The excel based cost management models use a theoretical framework of variable cost method and Sensitivity analysis to analyze profit scenario and calculate break-even points. Carneiro defines the Sensitivity Analysis as a simulation technique that examines the variation in the results if the initial forecast data is not obtained or if any fundamental assumption is changed. (Carneiro, 2004)

Colauto and Beuran argue that the increasing use of the variable costing method has proved to be an essential tool for Business planning, control, and decision making that involves minimizing costs and optimizing results (Colauto & Beuran, 2005). Wernke, Faccenda, and Junges define that the assessment of cost-volume-profit agribusiness can provide information regarding impacts caused by changes in production costs, sale prices, and volume produced in profitability. These authors also emphasize that this information is strategic, considering there are constant fluctuations in the prices of production inputs employed in agribusiness. (Wernke, Faccenda & Junges,2002).

Meyer and various other researchers together created a cost management framework that illustrates how the variable costing coupling with sensitivity analysis monitors costs and assists in better decision making (Meyer et al., 2012). The cost management systems use the same framework for cost monitoring and sensitivity analysis.



### *3.3.3 Limitations of the model*

One of the limitations of the Excel-based model and its variable cost method is that it is purely based on historical data and management assumptions. Inaccurate assumptions can lead to flawed projections, which can result in decision-making problems. According to Lemoine, "Users unfamiliar with Excel syntax may also find entering calculations and calling up other functions a bit frustrating until they get a solid understanding (Lemoine, 2017). It is important to note that the excel model does not check for human error during entry; this meant that wrong information could drastically skew the results. According to Tim Worstall, "JP Morgan lost Billions of dollars due to an equation erroring Excel introduced by users copying and pasting data (Worstall, 2013).

### 3.4 Picking the best fit

Cost-benefit analyses were carried out using the existing literature and the information collected from the primary research. The research pointed out that both ERP and Excel-based management systems satisfy the business's needs as they both have the required features to compute data analysis. In-depth analysis revealed that the ERP software is incompatible and expensive for Adil foods. Information regarding the ERP's implementation cost in Pakistan was unavailable, but the existing literature did provide some rough cost estimations. According to Geetha, "poultry farming ERP's implementation cost alone ranges from 0.45 to 1.3 million Indian rupees" (Geetha,2020). This roughly translates into 0.90 to 2.6 million Pakistani rupees. Adil foods management confirmed that they could not afford this as the ERP system is too expensive. There are standard ERP packages that are cheaper, but they do not provide any customization facilities. Every



Poultry farming business has its unique way of operating. A standard Enterprise resource planning software will be less adaptive and flexible for Adil foods.

The researchers also pointed out that it is more challenging for small to medium-scale businesses to implement ERP software due to limited resources. There is also less chance for an SME to recover from an unsuccessful ERP implementation as the smaller companies have fewer resources. All these insights indicate that Adil Foods as an SME should not opt for an ERP system.

The primary research revealed that some of the financial and operational managers at Adil Foods are already familiar with the Excel software. This means that it will be much easier for them to use the Excel-based cost management system. It is important to note that management and financial officers At Adil foods have never operated an ERP system before. The existing literature above indicates that compatibility is one of the significant factors determining the success of ERP. The lack of compatibility suggests that the Excel-based cost management system is a better fit for the organization.

After considering all the factors, the existing literature coupled with the information collected from the primary research indicated that excel based cost management system is a better fit. It is a more feasible and viable option because the company can afford it and the managers at the company are already familiar with the excel model. According to Microsoft, "The Microsoft 365 Business Premium costs \$20 user /month" (Microsoft, 2021). The Head of Finance manager confirmed that the business could afford this solution. The table below summarizes the comparison between the two solutions. It is important to note that both solutions have the required features and fulfill Adil Food's needs.

Proposed Solutions	Cost	Familiarity	Size of Firm	Resources
ERP System	Expensive, not viable for the company	Management has no experience with ERP system	Supports large companies	Requires heavier computer systems and technical expertise
Cost Management System	Viable, the organization can afford the solution	Some of the managers are familiar with the software	Supports SME's like Adil Foods	Requires relatively less technical expertise and resources

## Chapter 4: Solution & Implementation Plan

### 4.1 Chapter Overview

This chapter presents a viable solution for Adil Foods. Currently, Adil Foods uses a manual, outdated data system, and this system needs to be replaced with a new one. Adil Foods needs a personalized automatic information system that monitors and calculates all the variable and fixed costs, generates vital reports, and forecasts data.

### 4.2 Background of Solution

There are many different ERPs (Enterprise Resource Planning software) that can help the company manage and integrate core business processes. Still, these software' are costly and do not directly fit in with the business. The success of these models and software' heavily depends on how well these software's can fit into the business. Every poultry farming business has its unique way of operating. A standard Enterprise Resource Planning software is less adaptive and flexible. Adil Foods cannot introduce a tailor-made enterprise resource planning software due to financial constraints. The implementation of an ERP system also requires multiple data storage and processing units. Due to a lack of technological resources, Adil Foods can't operationalize an expensive Enterprise Resource Planning software.

On the other hand, the Excel-based models directly fit in with the business requirements for Adil Foods. The Excel-based models are tailor-made and can be easily altered as the business operations change or vary over time. An Excel-based model is the best option for the business as it is more flexible and easier to use. It is also much more affordable than the ERP.

### 4.3 Basic Model Outlay

The Excel-based cost management system monitors, forecasts, and graphically illustrates all the operational costs. The financial managers are required to feed in all the operational costs in the system. Some of the operational costs are feed-intake cost, vaccination cost, salaries of the workers, and flushing and deworming of the batch. The model automatically generates weekly operating cost, weekly feed-intake, cumulative week-by-week cost, cost per chicken, and cost per egg after the cost is input into the system. The system then converts these numerical figures into graphical representations; this will help the financial managers gauge the business's performance and assist in decision-making. The Excel-based cost management system also has an in-built forecasting system. To use this tool, the financial managers need to input all the operational costs. After the cost feeding process, the system automatically generates the overall simulative cumulative cost and profit. This allows the financial managers with budgetary and resource planning. Another prominent feature of this cost management system is its ability to collect information regarding the vaccination process. This feature will allow the operation managers to feed in all the necessary information regarding the vaccination processes.

### 4.4 In-depth Systematic Functions

#### *4.4.1 Profit/Loss Signals*

The system not only monitors costs but also sends useful signals to its users. In order to get these valuable signals, the financial managers must feed in all the operating costs and the market price per egg. The system then generates the cost per egg by calculating the weekly cost. The weekly cost is then divided by the number of eggs in order to get the cost per egg. The management system also compares the market price per egg

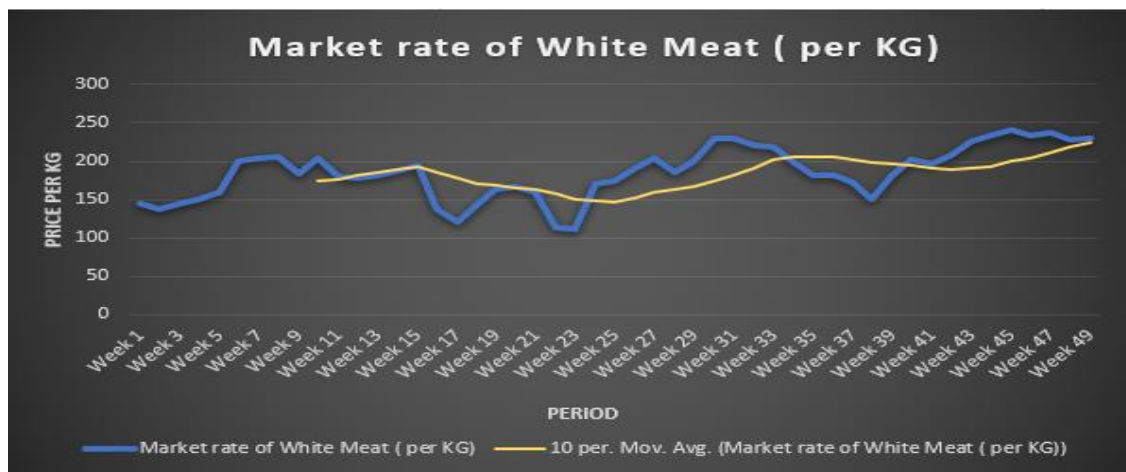
with the cost price per egg. If the cost price is greater than the market price, the system sends a signal stating "Loss." If it is vice versa, the system sends a signal stating "Profit." Poultry farming involves complex operational activities. Manual cost calculations can be quite challenging for finance managers. Analyzing cost behavior is essential in this business because the costs rise as the chickens grow up. The system keeps track of the costs and indicates whether the business is at a loss or profit.



The diagram above is generated by the cost management system. The data used in this cost management system were collected from Adil Foods. The cost price till week 33 was calculated using actual data; the system forecasted the rest. This is because the business decided to sell their batch after 33 weeks. The diagram shows the market price per egg and the cost price per egg. It is important to note that the line chart shows (weekly) market price per egg and (weekly) cost price per egg. The orange line is flat till week 15 because it takes the chicken roughly fifteen weeks to lay their first egg. The gap between the blue line and orange line is all profit coming from selling eggs.

#### 4.4.2 Computation of Cost per Chicken

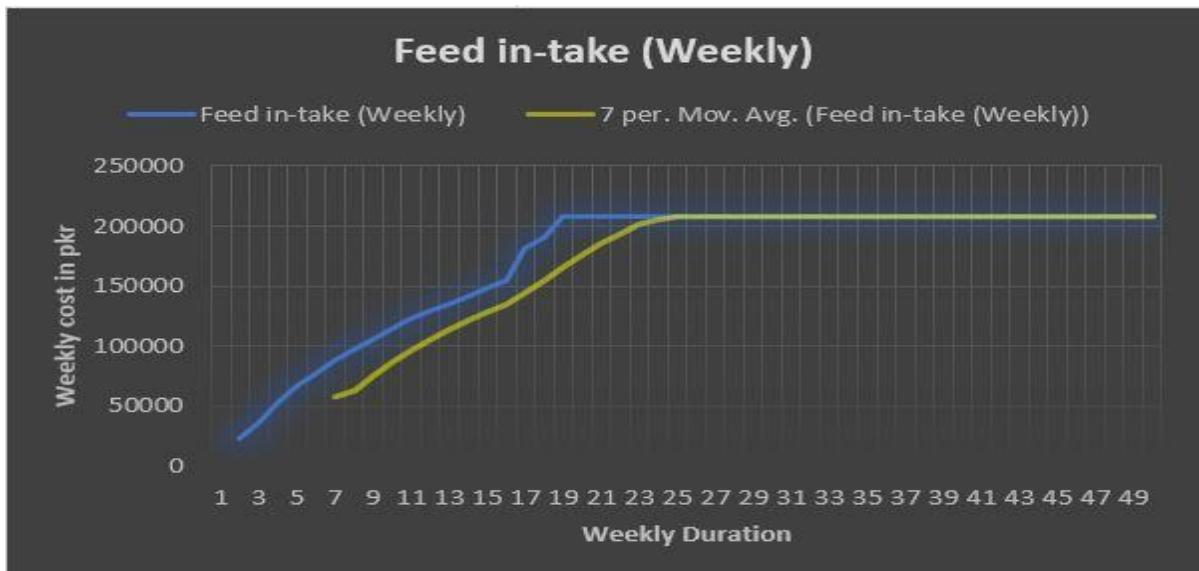
The system also calculates the profit/loss on selling white meat at the end of the session. The total cost of the chicken is calculated by summing up the total cost from week one to week 15. At the end of the session, this cost is deducted from the revenue generated by selling white meat in the market. The system computes revenue by multiplying the weight of chicken with the current market price (per kg). The system will not generate this information if the finance managers do not put in the required information. One key feature of the system is that it generates a moving average that smoothens the price fluctuations; this will allow the manager to analyze the trends and make critical decisions.



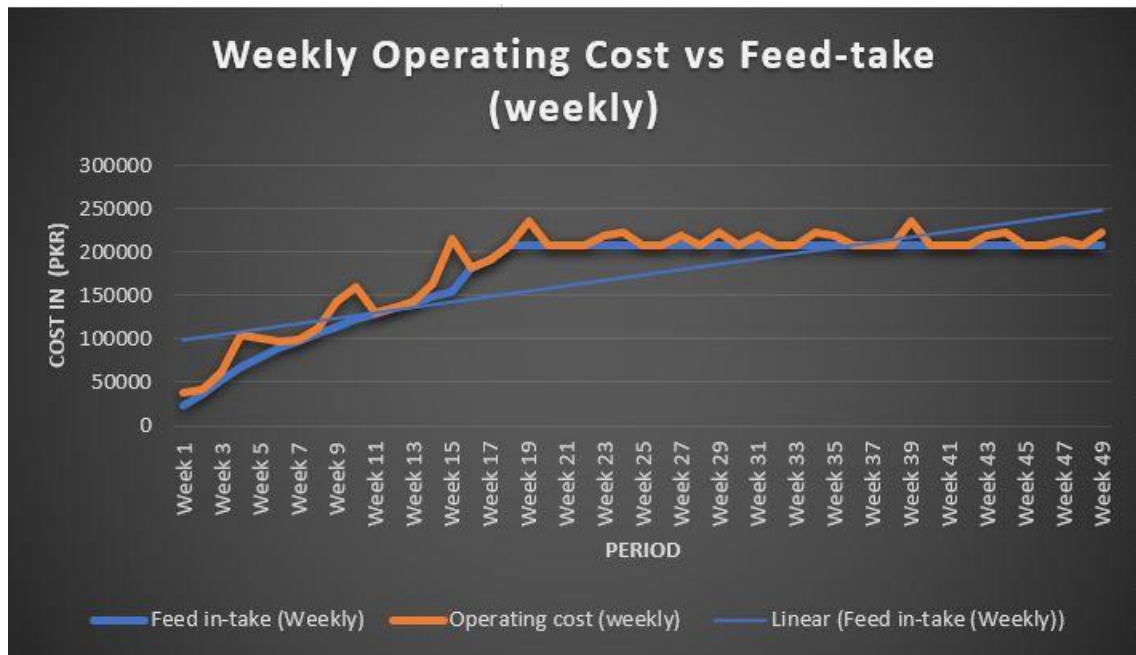
The diagram above shows the market rate of white meat (per kg) throughout the weeks. The system automatically generates the graph once all the data entries have been made. The system uses the 10-period moving average of the market rate of white meat (per kg) to smooth the price fluctuations. It will assist the finance managers in capturing trends and making the right decision. Selling chicken at the end of the session is crucial; spotting trends and selling the batch at the right time can help the business to maximize profit and minimize loss.

#### 4.4.3 Cost Behavioral Analysis

The cost management system assists the managers in studying the variations in the costs with respect to the level of activities. The system categorically illustrates how the feed-intake and vaccination costs increase as the chicken grows over time. It is no surprise that Feed is the most significant cost contributor in the poultry enterprise. The model closely monitors the feed-intake cost and the weekly operating cost. The cost management system can help the managers to evaluate the impact on profitability as the input prices change over time.



The diagram above shows the weekly feed-Intake cost and the 7-period moving average of weekly feed intake cost. The data used in this cost management system were collected from Adil Foods. The cost price till week 33 was calculated using actual data; the system forecasted the rest. The feed-intake cost continuously increased from week one to week nineteen. After week twenty, the feed-intake quantity was fixed, resulting in a flat line till week forty-nine. The graph is automatically generated by the system and assists the managers in monitoring the weekly feed-intake cost.



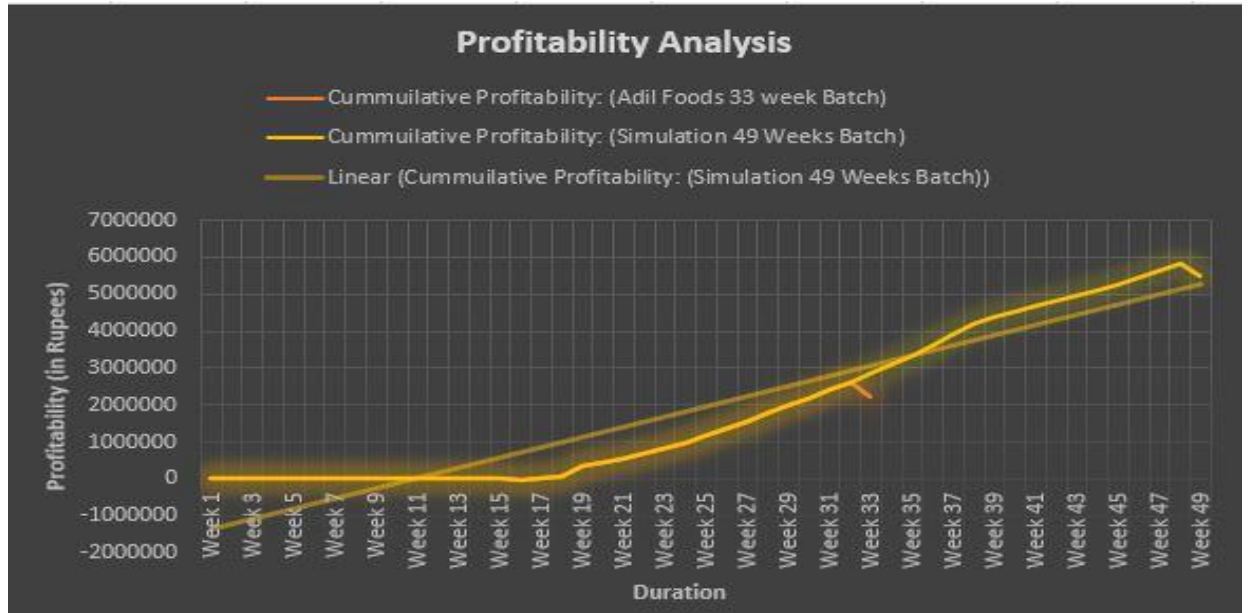
The system automatically generates the graph above once the data have been input into the system. The graph compares the weekly operating cost and feed-intake activity. The lack of gap between the blue and the orange line shows that Feed is the most significant cost contributor in the day-to-day operational costs. According to the system, 78% of the total cost is associated with feed intake. It is clear that in order to achieve greater profit in the future, Adil Foods need to reduce Feed-intake costs by producing Feed by themselves.

#### 4.4.4 Forecasting tool

The cost management system has an integrated forecasting system that can project revenues and operational costs. The forecasting system will enable the managers to optimize their resources and maximize the company's profits fully. The managers can use this tool by copying the Excel file and inputting all the relevant costs. Some key operational costs are the cost of the feed bag and vaccination. The system forecasts the simulated



overall operational costs and profitability. The forecasting tool is an extension of the real-time batch costing, which allows the managers to make wise and timely decisions.



The line chart above compares the cumulative profitability of the 33-week batch and the simulated 49-week batch. The data used in this cost management system were collected from Adil Foods. The cost price till week 33 was calculated using actual data; the system forecasted the rest. The orange line shows the cumulative profit that Adil Foods generated with a single batch of chickens. On the other hand, the yellow line shows the simulated profit Adil Foods could have generated if they had decided to keep the batch till week 49. The linear approach shows an upward trend in profitability; this can be used as an indicator in the future. The upward trend in the forecast will indicate to the managers that they should keep the batch for a more extended period in order to cultivate greater returns. The break-down of the overall profitability is listed below:

<b>Overall Profitability: (Simulation over 49 weeks)</b>	
<b>Eggs:</b>	6,026,008
<b>White Meat:</b>	
<b>Revenue from White meat at the end</b>	1,671,525
<b>Cost of white meat</b>	2,205,334
<b>Profit/loss on white meat</b>	(533,809)
<b>Total Profit/loss</b>	<b>5,492,199</b>

<b>Overall Profitability: (Adil Foods 33 week batch)</b>	
<b>Eggs:</b>	2,860,224
<b>White Meat:</b>	
<b>Revenue from White meat at the end</b>	1,584,315
<b>Cost of white meat</b>	2,205,334
<b>Profit/loss on white meat</b>	(621,019)
<b>Total Profit/loss</b>	<b>2,239,205</b>
<b>Difference in Profitability</b>	<b>145.27%</b>

Adil Foods could have increased its profits by 145.27% if it had decided to keep the batch for a more extended period. The business managers sold the batch after 33 weeks; they believed that the business would incur loss due to high feed-intake cost. The managers were unable to monitor costs and analyze data effectively. The profitability sheet shows that Adil Foods could have increased its profits by selling more eggs. The sheet shows that the business would have incurred more loss on white meat if the management had decided to keep the batch for 49 weeks, but this loss would have been covered up by the profit generated by selling eggs in those extra 16 weeks. The forecasting tool and the batch costing system will help the business immensely; the model will provide valuable projections that will enable the managers to make rational and timely decisions.



#### 4.4.6 Adaptability of the model

The cost management system can quickly adapt to the changing dynamics of the business. Poultry farming businesses have various variables that change with the level of activity. External factors also influence these variables. Some of these variables are egg-efficiency, feed intake, and chicken mortality rate. The cost management system provides the flexibility to make changes in the input costs; the managers can change the input costs in the poultry farm cost sheet.

<b>Feed Costing (Pre-lay)</b>	<b>Rs.</b>
Feed Bag (no egg) 50kg bag	3,185
cost per gram	0.06
<b>Feed Costing (Post-lay)</b>	<b>Rs.</b>
Feed Bag (egg) 50kg bag	3,590
Cost per gram	0.07
Number of chicks in a single batch	4,750

The price of the feed bag can change over time. The system will allow the managers to change the cost of the bag as the market price of the feed bag changes with time. It calculates the cost per gram and then multiplies it with the feed intake of the chickens. The break-down below shows the type of Feed, bodyweight target, and feed intake (weekly in grams) per chicken. The operations managers can make the necessary changes in the system by simply editing the numerical figures. The feed-take is generally fixed after 18 weeks. The schedule was created after studying Adil Foods' historical operation patterns. The complete schedule is available in the Excel file.

Age (Weeks)	Type of Feed	Feed In-take (g/day)	Cumulative Feed in take (kg)	Body Weight target (g)	Feed In-take (Weekly in grams)
1	Grower-Pre (Lay)	11	0.1	60	77
2	Grower-Pre (Lay)	17	0.2	120	119
3	Grower-Pre (Lay)	25	0.4	190	175
4	Grower-Pre (Lay)	32	0.6	275	224
5	Grower-Pre (Lay)	37	0.9	360	259
6	Grower-Pre (Lay)	42	1.1	450	294
7	Grower-Pre (Lay)	46	1.5	540	322
8	Grower-Pre (Lay)	50	1.8	630	350
9	Grower-Pre (Lay)	54	2.2	720	378
10	Grower-Pre (Lay)	58	2.6	810	406
11	Grower-Pre (Lay)	61	3	900	427
12	Grower-Pre (Lay)	64	3.5	1000	448
13	Grower-Pre (Lay)	67	3.9	1095	469
14	Grower-Pre (Lay)	70	4.4	1180	490
15	Grower-Pre (Lay)	73	4.9	1265	511
16	Grower-Pre (Lay)	76	5.5	1350	532
17	Grower-Pre (Lay)	80	6	1425	560
18	Post-Lay	87	6.6	1500	609

Egg efficiency is another variable that is heavily influenced by external factors such as weather and diet. Egg efficiency is the egg production in percentage. A one hundred percent egg efficiency means one egg per hen per day. Adil Foods' internal reports showed a 90% egg efficiency rate which is why 90% was used to forecast and calculate the overall profitability. The managers can change the egg efficiency rate by editing the numerical figures. Research has shown that egg efficiency reduces in winters, and brooding costs increase in the winters. The cost management system will not only allow the managers to change the efficiency costs and other relevant costs, but this will also help the management to collect helpful information for the future. Over time, the cost management system will enable the management to study yearly trends and price movements, allowing the managers to plan accordingly. The egg efficiency timeline chart below provides information about egg production. The complete chart is available in the Excel file.

Egg Efficiency timeline	Egg Efficiency	Number of Chicks	Mortality rate	Egg Production	Egg production Weekly
Age (Weeks)	(Percentage)	5000	5%	Weekly egg per chicken	(Weekly)
1	0.00%	4750		0	0
2	0.00%	4750		0	0
3	0.00%	4750		0	0
4	0.00%	4750		0	0
5	0.00%	4750		0	0
6	0.00%	4750		0	0
7	0.00%	4750		0	0
8	0.00%	4750		0	0
9	0.00%	4750		0	0
10	0.00%	4750		0	0
11	0.00%	4750		0	0
12	0.00%	4750		0	0
13	0.00%	4750		0	0
14	0.00%	4750		0	0
15	0.00%	4750		0	0
16	40.00%	4750		1900	13300
17	60.00%	4750		2850	19950
18	80.00%	4750		3800	26600
19	90.00%	4750		4275	29925
20	90.00%	4750		4275	29925
21	90.00%	4750		4275	29925

## 4.5 Excel Guide

### 4.5.1 Introduction

The Excel-based cost management system is a complex model that assists managers in making rational and prompt decisions. The system will only be helpful if the managers input the correct figures in the right cells. This guide will help the managers to operate the Excel model. The model has five sheets, and each one of them performs different functions. The model uses cell-referencing, meaning once the costs are input, these numerical figures can be used in formulas to extrapolate different results.

### 4.5.2 Poultry Farm costs (Sheet 1)

The managers are required to input all the basic operational costs and market prices of the commodities. These numerical figures will then be used in all the other sheets to generate results. Lack of data accuracy can produce flawed results and projections. The managers need to input the correct figures in the right cells. The table below will assist the managers in inputting the correct information.

Input Information	Cells	Functions
Feed-intake (g/day)	F3-F26	The system calculates the Feed-intake (weekly in grams).
Egg efficiency	E31-54	The system calculates weekly egg production (total)
Mortality rate	G30	The system deducts expired chickens from total chickens
Capital investments	B2-B10	The system sums up all the costs.
Basic operational costs	B13-24	The system sums up all the costs.
Vaccination costs	B27-B33	The system sums up all the costs
Market price of white meat	B43-B91	The system uses this information in sheet 2
Market price of eggs	C43-C91	The system uses this information in sheet 2

#### 4.5.3 Batch Costing (Sheet 2)

Sheet 2 retrieves information from sheet one and calculates:

1. Operating cost weekly
2. Cumulative week by week cost
3. Number of chickens in a batch
4. Number of eggs produced ( weekly)
5. Cost per chicken
6. Cost per egg
7. Chicken body weight (kg)
8. Revenue (white meat)
9. Revenue (eggs)
10. Overall profitability

It is important to note that the cost management model assumes that the batch will be sold after 33 or 49 weeks. The model only allows one to input data till week 49 because it is a common practice in the industry to sell the batch after 40 weeks. **This is because the egg efficiency reduces after the first year.** The pointers below will assist the managers in

calculating the overall profitability; the rest of the calculations will be automatically generated by the system.

In order to calculate the overall profitability of the batch, follow the following steps in sheet 2:

Assumption: The business decides to sell the batch after week 40.

- 1) The managers will need to clear the cells ranging from (AQ1-AQ53 to AY1-AY53).
- 2) Then, the managers will need to sum cells B52 to AP52 to calculate the profit from eggs. The egg profitability should appear in cell B69.
- 3) The next task for the managers is to calculate the revenue from white meat. This can be calculated by multiplying the market price of white meat (per kg) with the chicken body weight. The result then has to be multiplied by the total number of chickens to calculate the total revenue. The managers can do this by simply multiplying cell AP44 with AP48. The result then has to be multiplied with cell F31 of sheet 1. White meat revenue should appear in cell B74.
- 4) The last task for the managers will be to calculate the total cost of white meat. The managers will be required to find the cumulative week-by-week cost before the chickens started laying eggs and reference it. In this case, the managers will need to reference cell Q37. The total cost of white meat should appear in cell B74.
- 5) The system will automatically calculate the total profit/loss.

#### *4.5.4 Forecasting tool (Sheet 3)*

It is recommended that the managers create a duplicate copy of the excel file and use it for data forecasting. Keeping the actual data and forecast data in separate files would



eliminate confusion. In order to calculate the projections, the managers are required to input all the basic operational costs and market prices of the commodities in sheet one of the copied Excel file. These numerical figures will automatically generate projections in sheet

3. The table below will assist the managers in input the correct information.

<b>Input Information</b>	<b>Cells</b>	<b>Functions</b>
Feed-Intake (g/day)	F3-F26	The system calculates the Feed-intake (weekly in grams).
Egg Efficiency	E31-54	The system calculates weekly Egg production (total)
Mortality rate	G30	The system deducts expired chickens from total Chickens
Capital Investments	B2-B10	The system sums up all the costs.
Basic operational costs	B13-24	The system sums up all the costs.
Vaccination costs	B27-B33	The system sums up all the costs
Market price of white meat	B43-B91	The system uses this information in sheet 2
Market price of Eggs	C43-C91	The system uses this information in sheet 2

The system will automatically compute and forecast all the results except the overall cost and profitability of the business. This has to be done manually as the system is not aware of when the managers decide to sell to batch. Thus, the overall projected costs and profitability have to be calculated by the managers manually in sheet 3.

In order to calculate the Projected overall costs and profitability of the batch, follow the following steps:

Assumption: The business has decided to sell the batch after week 40 in advance.

- 1) The managers will need to clear the cells ranging from (AQ1-AQ53 to AY1-AY53).
- 2) Then, the managers will need to sum cells B52 to AP52 to calculate the projected profit from eggs. The projected egg profitability should appear in cell B69.
- 3) The next task for the managers is to calculate the Projected revenue from White meat. This can be calculated by multiplying the market price of white meat (per kg) with the chicken body weight. The result then has to be multiplied by the total number of chickens to calculate the total revenue. The managers can do this by simply multiplying cell AP44 with AP48. The result then has to be multiplied with cell F31 of sheet 1. White meat revenue should appear in cell B74.
- 4) The last task for the managers will be to calculate the projected total cost of white meat. The managers will be required to find the cumulative week-by-week cost before the chickens started laying eggs and reference it. In this case, the managers will need to reference cell Q37. The projected total cost of white meat should appear in cell B74.
- 5) The system will automatically calculate the projected total profit/loss.

#### *4.5.5 Vaccination Report (Sheet 4)*

There is no calculation involved in the vaccination costs (sheet 4). The managers are only required to input the date, time, type of vaccination, name of vaccination, and the

batch number of the chickens. The table below will assist the managers in input the correct information.

<b>Input Information</b>	<b>Cells</b>
Date	Column A
Time	Column B
Type of Vaccination	Column C
Vaccination Name	Column D
Batch Number	Column E

#### *4.5.6 Graphical Analysis (Sheet 5)*

The system automatically generates all the line graphs once the data is entered in the previous sheets. The cell reference function allows the system to update data in the worksheet without rewriting the formulas. The line graphs change as the cost structure and gross profit of the businesses changes with time.

## CHAPTER 5: CONCLUSIONS & RECOMMENDATIONS

### 5.1 Chapter Overview

This chapter highlights the limitations of using the cost management system and outlines recommendations to assist Adil Foods in carrying out the solution. This chapter also includes a general conclusion that sheds light on how the administration at Adil Foods can fully benefit from the Excel-based cost management system in the future.

### 5.2 Limitations

- One of the main limitations of the cost management system is that it has a complex design and will take time for the managers to understand the system. The cost management system is Excel-based, meaning the managers must have basic Excel skills. Currently, only a few operational and financial managers have the basic excel skills to operate the Excel model.
- Another limitation is that the cost management system is vulnerable to internal and external fraud and lacks security. It is vulnerable to internal fraud and corruption because the managers input all the information. Manual data entry can prove to be a weakness for the business. Managers can manipulate the data for their own benefit. The Excel-based model is also vulnerable to external attacks from hackers; they can steal useful all the confidential data from the excel servers. The Excel model does not have a robust data protection security system like the Enterprise resource planning software.

- Moreover, the managers must create assumptions to use the forecasting tool in the cost management system. Wrong or inaccurate assumptions can have a negative impact on the decision-making process. Also, the data may be interpreted differently by different financial managers, leading to confusion.
- Lastly, it is important to note that the system fails to consider the soft factors. It purely considers hard factors and does not include soft factors such as labor force, management styles, work methods, and organizational systems.

### 5.3 Key Recommendations

- Adil Foods should introduce an Excel training program for its employers. It will help the managers to understand the cost management system and develop their excel skills. The excel training program will help improve employee productivity by allowing monotonous tasks to be completed more efficiently. It will also enable employees to input accurate assumptions and conditions in the model, leading to fewer errors.
- The cost management system is a tailored-made system that can provide accurate and valuable information to Adil Foods. The managers should frequently use the forecasting tool and analyze the graphical illustrations; this will allow the managers to understand the different dynamics of the changes in the input prices. Effective cost monitoring will help the managers to reduce operational costs and increase profitability.
- One of the significant findings was that the excel model pointed out that Feed is the most significant cost contributor. According to the data analytics, 78% of the total operating cost is associated with the Feed-Intake. Adil Foods should deploy the

backward vertical integration strategy by producing Feed by themselves. They have the resources and the experience to carry out this strategy. In-house feed production will drastically reduce the operational costs, resulting in a higher profit margin.

- Lastly, it is recommended that the managers save all the excel files in a secure database. This will allow the management to go back and analyze historical price fluctuations. It will also help the recently employed workers to understand the different dynamics of the business in the future.

#### 5.4 Conclusion

The project's main goal was to achieve all research objectives. The three research objectives are mentioned below:

- 4) To Understand the fundamental operational process of the business
- 5) To Analyze why the business failed to achieve its profitability goal
- 6) To Develop an intervention plan to counter the problem

A mixed research strategy was implemented to extract and analyze useful information. Qualitative and quantitative research methods assisted in understanding the business model and pointed out that lack of data analysis led Adil Foods to poor decision making. Poor decision-making was driving down the overall profitability of the business. A tailor-made cost management was developed after collecting all the data and identifying the underlying factors. The model was then tested for financial as well as technical irregularities. The cost management system has multiple functions that will allow the administration to make rational and timely decisions.

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## Appendices

### Appendix I: Informed Consent Form

#### Informed Consent Agreement

- I..... voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within one week after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing, and I have had the opportunity to ask questions about the study.
- I understand that participation involves providing insights into how Adil Foods operates as a business.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio recorded.
- I understand that my identity will not remain anonymous in any report on the results of this research.
- I understand that extracts from my interview may be quoted in...[list all forum in which you plan to use the data from the interview: dissertation, conference presentation, published papers etc.].
- I understand that if I inform the researcher that myself or someone else is at risk of harm, they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
- I understand that under freedom of information legalisation, I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

- This research protocol has been reviewed and approved by the Ashesi University Human Subjects Review Committee. If you have any questions about the approval process, please contact Chair Ashesi University HSCR ([irb@ashesi.edu.gh](mailto:irb@ashesi.edu.gh)).

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Signature of participant

-----  
Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

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Signature of researcher

-----  
Date

## Appendix II: Interview Guides

### 1. Structured Interview

#### Interview with Mr. Rashid (CEO)

Q1) Can you please enlighten us about the operational activities that take place in the poultry farming division?

Q2) How satisfied are you with the current level of production and profits?

Q3) Do you think the business model needs any changing? If yes, what are those changes?

Q4) Are you planning to expand the poultry farming department? If yes, please kindly shed light on how you plan to expand?

Q5) According to you, why did the business fail to achieve its profitability and sales targets?

2. Structured Interview

Interview with Mr. Saqib (Finance Officer)

Q1) Do you think the company Adil Foods is currently financially stable?

Q2) According to you, why did the business fail to achieve its profitability and sales targets for the year 2020?

Q3) Was there any significant increase in the overall day-to-day operational cost? If yes, what was the reason behind it?

Q4) How does the business monitor its day-to-day operating cost?

Q5) Are there any external factors that have negatively impacted the company's performance? If yes, please kindly name a few.

3. Structured Interview

Interview with Atif Azeem (Production manager)

Q1) Are you currently satisfied with the current level of production?

Q2) What steps has Adil Foods taken to improve the productivity and efficiency levels in the last few months?

Q3) Do you think the production systems can be further improved?

Q4) According to you, why did the business fail to achieve its profitability and sales targets for the year 2020?

Q5) Is Adil Foods planning to induct more technology into the production system in order to improve its production capacity? If yes, how will this help the business in the long run?